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ABSTRACT

The three-stage model of instruction developed at Purdue University--which has been applied successfully in graduate and undergraduate college courses, workshops, and high school courses--is discussed. The system depends heavily on printed instructional material to guide student efforts. The model provides an approach for teaching basic subject matter, higher level cognitive understanding, and applications. Steps in designing a course are formulation of course goals and organizing the content into units. For each unit, a set of materials and activities is planned. The first activity of each unit is a set of directed learning activities designed to transmit basic information with understanding. For this stage the student receives a self-instructional guide. The next stage of activity involves small group projects designed to help the students learn how to use the basic information. Stage three involves doing an individual project. A model syllabus, which is appended, illustrates a college course designed in the three-stage model. A sample course outline, sample information questionnaire, and instructional objectives for the self-instructional guide, the group instructional guide, and the individual projects are included. (SW)

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Practitioners' Views on . . .

INSTRUCTIONAL GUIDES IN COLLEGE TEACHING:

THE PURDUE THREE-STAGE MODEL

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by

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August 1978

Introduction to Practioners' Views

Practioners' Views are offered as one means to share the insights, observations, and recommendations of experienced college teachers with their colleagues. The Views will make concrete suggestions about ways to improve teaching.

A basic assumption of these Views is the there is no SINGLE, CORRECT way to teach. The effectiveness of one's teaching depends on a multitude of factors including: the objectives of the particular course; the teaching style and other traits of the instructor; and such student characteristics as learning ability, motivation and educational goals. These Views papers suggest various approaches to address problems in teaching and their authors hope that they will aid their colleagues in experimenting with the professional practice of college teaching.

The Center Staff is pleased to publish Instructional Guides in College Teaching: The Purdue Three-Stage Model written by Dr. John F. Feldhusen.

Dr. Feldhusen is a Professor of Education and Psychological Sciences at Purdue University. He is also the Director of Instructional Development in the School of Humanities, Social Science and Education. He is the author of many articles and research reports on college instruction and evaluation. He has a new book on design of college courses which will be published by Education Technology Publications later this year.

Stephen C. Brock
William E. Cashin

Fall 1978

Instructional Guides in College Teaching:

The Purdue Three-Stage Model

John F. Feldhusen[1]

The problem of communication between instructors and students pervades all aspects of college teaching. Students complain about the difficulties of understanding lectures, assignments, and test questions. Instructors are often amazed at how students misinterpret projects and essay questions. Students also complain that it is difficult to determine an instructor's goals or purposes.

In an effort to overcome these problems we set out, about six years ago, to develop a new model of instruction which would emphasize (1) efficient transmission of information with understanding, (2) use of information in higher level cognitive activities, and (3) practical applications. The model we developed came to be called "a three-stage model" and it has been described and evaluated in a number of publications (Feldhusen, Ames, & Linden, 1973, 1974; Feldhusen, Linden, & Ames, 1975; Ames, Linden, & Feldhusen, 1977; Linden, Ames, & Feldhusen, 1977).

In the development of the model we recognized early the critical nature of the instructional materials for our model. Since it was richer and more complex than ordinary lecture-discussion-test models, the need for materials which would explain clearly and provide guidance to students in course activities was evident. Thus, we set about designing materials explicitly related to the major components and aspects of the model.

Course Goals

Before proceeding with the description of materials, the basic characteristics of the model should first be presented. We believe that all course designers should begin by formulating broad goals to guide their design efforts. We formulated the following set:

1. Learn a set of basic concepts, principles, and theories
2. Become self-directed learners
3. Develop higher cognitive abilities; analysis, synthesis, evaluation
4. Learn how to apply knowledge to realistic professional problems

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[1]I wish to recognize my colleagues, Drs. Kathryn W. Linden and Russell E. Ames of Purdue University who have been close partners in all of the departmental work with the Purdue Three-Stage Model. Their applications of the model in the undergraduate educational psychology course and in graduate courses at Purdue University have provided a sound basis for the system.

5. Develop competence in working with others on professional problems

6. Learn to help one another achieve course goals

7. Achieve personal relevance from the course experiences.

Course Content

The second major step in designing a course in the model is to organize the content into units. We find that six to ten units is typical for many courses. Then, for each unit, a set of materials and activities is planned. The first activity of each unit is a set of directed learning activities designed to transmit basic information with understanding. For this stage the student receives a self-instructional guide which provides direction. The student works on his own in this activity. At the completion of this stage, which may run two to seven days, the student must take and pass a mastery test on the material. He/she then goes to the next stage of activity for the unit which involves small group projects designed to help the students learn how to use the basic information learned in stage one in higher level intellectual activity, in problem solving, and in application projects. This stage of activity may last one to three weeks and always culminates in some written product which is graded on a pass-fail basis. The student then goes on to stage three which involves doing an individual project using what has been learned from stages one and two. Stage three culminates in a product which is graded on a point scale and which constitutes the major evaluation of the course.

Because of the complexity of the model, students must be given clear orientation to the course. The major instrument for this purpose is the syllabus. Appendix A of this paper gives a model syllabus for a course on college teaching designed in the three-stage model. The syllabus begins with a statement of the instructor's philosophy, states the unit topics, describes the instructional material used in the course, tells how the instructional objectives are used, describes in-class activities, sets forth policies for testing and grading, offers alternative units for students who may already have studied some of the unit topics, states the attendance policy, describes the role of the instructor and TA's, lists the texts, and covers several other course details. The syllabus is a crucial document. The instructor should allow students to read it in class, answer questions and discuss any problems students might note. It will not suffice to have students read it at their leisure since many would then neglect to do so.

The second major orienting document is the course outline. An outline for a part of the same course is presented in Figure 1. It shows the general sequence of events and materials taught in a course following the three-stage model. The box head shows the date of a course meeting, the unit topic at that time, in-class activities, assignments due, and handouts. This document is a valuable communication for students and instructors to keep both on schedule.

Figure 1

Outline

College Teaching Course

Date	Unit Topic	Class Activity	Assignment Due	Handouts
Jan. 11	Instructional Objectives	Discuss course and materials and complete questionnaire		Syllabus, Outline SIG #1
13		Introductory small group work		
15		Test #1		
Jan. 18	Instructional Objectives	Small group work		GIG #1
20		Small group work		
22		Small group work		PIP #1
Jan. 25	Student Characteristics	Lecture-Discussion: Summarize Unit #1 and introduce Unit #2		SIG #2
27		Individual conferences		
29		Test #2	PIP #1	
Feb. 1	Student Characteristics	Small group work		GIG #2
3		Small group work		
5		Small group work		PIP #2
Feb. 8	Learning	Lecture-Discussion: Summarize Unit #2 and introduce Unit #3		SIG #3
10		Individual conferences		
12		Individual conferences	PIP #2	
Feb. 15		Test #3		
17		Small group work		
19		Small group work		
Feb. 22	Testing	Lecture-Discussion: Summarize Unit #3 and introduce Unit #4		SIG #4

At the first meeting, the syllabus and outline are distributed and discussed as is the first self-instructional guide for Unit #1 which is on the topic "Instructional Objectives". A questionnaire is also administered to secure background information about all the students. Figure 2 gives an illustration of a questionnaire. A unique feature is the self ratings by students of their level of knowledge of the major course topics. This is an effective, yet simple alternative to pretesting. The information is useful in planning subsequent course activities.

4

Figure 2

Information Questionnaire

Name_____

Address_____

Telephone: Home_____ Office_____

What do you consider your special strengths as a teacher or instructional developer?

_____

What are your weaknesses?_____

_____

List or describe briefly the instructional materials or devices you have developed.

_____

_____

For each of the following topics rate your level of knowledge using this scale.

4 - know a great deal
3 - know quite a bit, can get by
2 - know some, but need to know more
1 - know little or nothing

___1. behavioral objectives
___2. Bloom's Taxonomy
___3. learning theory
___4. instructional psychology
___5. teacher rating scales
___6. developing classroom tests
___7. developing instructional modules
___8. audio-tutorial methods
___ 9. mastery learning
___10. the Keller plan
___11. audio-visual equipment
___12. discussion techniques
___13. gaming and simulation
___14. lecture techniques
___15. CAI
___16. individualizing instruction

The students' work in stage one is directed by a Self-Instructional Guide (SIG) as illustrated in Figure 3. The introductory paragraphs serve as advance organizers to orient the student to the unit and as motivational devices to stimulate interest. Objectives are then stated to guide students' study. Next, instructional activities are offered. Usually, we offer a number of resources and expect the student to use two or three. These resources include references to books, book chapters, programmed learning, and auto-tutorial units. Finally, the SIG gives some self-test questions which the student can use to prepare for the mastery test. Students are encouraged to study the SIG carefully in class, to ask questions as necessary to clarify the learning tasks, and to begin plans for their individual study. Since the mastery test will be given just four days later, the typical procrastination of study until a midterm exam threatens is not possible in the three-stage model. Study must begin within a day or two.

Figure 3

Self-Instructional Guide (SIG)

Instructional Objectives

Broad goals must be translated into specific instructional objectives and/or educational activities. Instructional objectives are used in designing specific instructional activities related to the curriculum, discipline, or subject matter. Some goals are translated directly into course activities, not into objectives. Our concern in this unit will be with the formulation of instructional objectives.

Objectives

(1) To be able to identify cognitive, affective and psychomotor objectives.

(2) To be able to discriminate among the levels of the Bloom Taxonomy.

(3) To be able to identify components of objectives.

(4) To be able to state pros and cons of objectives.

Instructional Objectives

Read or do one or more of the following:

(1) Kibbler, R. J. et al. Objectives for Instruction and Evaluation. 1974.

(2) Bloom, B. et al. Taxonomy of Educational Objectives, Handbook I, Cognitive Domain. 1956.

(3) Krathwobl, D. R. et al. Taxonomy of Educational Objectives, Handbook II, Affective Domain. 1964.

(4) Harrow, A. J. A Taxonomy of the Psychomotor Domain. 1972.

(5) Kryspin, W. J. et al. Writing Behavioral Objectives. 1974.

(6) Exxon Minicourse, Behavioral Objectives.

(7) Exxon Minicourse, Affective Objectives.

Self Quiz

(1) What are the three domains of objectives? Briefly describe each.

(2) What are the six major levels of the Bloom Taxonomy?

(3) Practice identifying components of objectives, using examples given in texts.

(4) State several arguments for and against behavioral objectives.

The second meeting of the course is devoted to a short group project to give students some preliminary guidance in such activity. This small group project takes about 25 minutes. The remaining time is devoted to lecture and discussion on methods of small group activity and how students can work together to facilitate learning. At this session, students are also given a printed guide listing principles and guidelines for small group activities. They use this as a reference throughout the course when problems arise.

At the third meeting, typically two days later, a mastery test on the first unit is given and scored immediately, as individual students complete it, by the TA's. The student is then given a feedback sheet giving the rationale for each test item and encouraged to review items s/he got wrong. Students who pass are free to leave then. Those who fail must make an

appointment for retesting within five days. The criterion passing score is set at a level which instructors feel provides a minimal competence in the unit material in order for the student to perform successfully in stages two and three. Ninety to ninety-five percent of students pass the first time.

The next three class meetings, as shown in the outline in Figure 1, are devoted to small group work. The number of class sessions devoted to small group work can vary from one to eight class sessions, depending on the range of the project. For some units stage 3 is omitted, and then stage 2 is apt to be longer. Stage 2 student group work is controlled by the Group Instructional Guide (GIG) which is illustrated in Figure 4. Again, there is an introduction followed by objectives. These objectives are typically at higher levels of the Bloom Taxonomy (1956). The GIG then states the tasks the group is to do and the project they must turn in. While students then work on the project, the instructor and TA's circulate and assist groups in clarifying and working on the activities. The group product is graded on a pass-fail basis and each student is given a set number of points for a group project completed successfully. Group projects are not graded on an A-B-C-D continuum nor given higher point values because unequal contributions of individual group members create morale problems. The pass-fail grading seems to overcome this difficulty.

Figure 4

Group Instructional Guide (GIG)

Instructional Objectives

Introduction

Many of you will become models, resource persons, or consultants for others who are interested in instructional development. In those roles you might have to teach others about instructional objectives. If you undertake such a task, you would certainly want to have your own instructional objectives and plans for a unit on objectives clearly formulated.

Objectives

(1) To be able to work with others in selecting topics and preparing a sequential outline for a unit on instructional objectives.

(2) To be able to prepare a small specification chart for your unit.

(3) To be able to write some objectives for the unit at all levels of the Bloom Taxonomy.

Tasks and Products

(1) Prepare a specification chart of objectives for a unit on instructional objectives.

(2) Write your objectives in the order in which they would be taught on a transparency for display to the class. Show the taxonomy level for each objective.

At the third and last group work day, the third stage of the unit is initiated with the handing out of the Procedure for Individual Projects (PIP) for the unit. An illustration of a PIP is given in Figure 5. Again there is a brief introduction and then a statement of objectives. The objectives now state higher level and personalized applications of the unit material. The student will have about one week to do the individual project.

Figure 5

Procedures for Individual Projects (PIP)

Instructional Objectives

Introduction

Instructional objectives should be written or selected for all topics covered in a course. They should be specific enough to be useful to you in designing instructional activities and tests, and they should be useful to students as guides to learning. In some disciplines, complete sets of objectives have been published. In such cases, the instructor can merely select those which he believes appropriate for his courses.

Objectives

(1) To be able to write the behavioral objectives for a unit of instruction.

(2) To be able to write objectives at several levels of the Bloom Taxonomy or in the affective and psychomotor domains as well as the cognitive.

(3) To be able to use a specification chart approach to the organization of a set of objectives.

Tasks and Products

(1) Search for available sets of objectives in your discipline.

(2) Select a topic. Break it down into subtopics and arrange them into a sequential outline.

(3) Prepare a specification chart.

(4) Write or select objectives for the cells.

(5) Write at least one or more affective objectives for the same topic.

The next class session, January 25 in the illustration in Figure 1, is devoted to a brief lecture and discussion summarizing the unit just completed. Then the SIG for the next unit is distributed and further lecture-discussion is offered as introduction to the unit. During the week, then, the student is engaged in study for the next mastery test on the new unit and in work on the Individual Project for the previous unit. As shown in the syllabus, the Individual Projects will be graded on a point scale with relatively high weight. The Project is due on the same day as the next mastery test, January 29. The second class meeting of that week or period is often devoted to individual conferences, and students are not required to attend the regularly scheduled class session.

Close inspection of Figure 1 will show that no PIP was assigned for Unit 3. We have found that the group activity in some units is sufficient to teach the basic concepts, and further that the demands of the course must occasionally be relaxed to avoid overburdening students with work.

The three-stage model has been used by many instructors at Purdue University and elsewhere during the past six years. Formal and informal evaluation of the system in terms of student learning and ratings of the course show it to be a successful approach to instruction.

Developing and operating the course does require a great deal of effort. Thus, we developed a system of differentiated staffing to support the activity (Linden, Ames, & Feldhusen, 1977). The graduate and undergraduate TA's are an invaluable source of help in developing and operating the course. They also learn a great deal about teaching and course development. They enroll in a special practicum course to earn credit and meet weekly with the senior instructor to discuss their experiences.

Summary

The Purdue three-stage model has been applied successfully in graduate and undergraduate college courses, workshops, and high school courses. The system depends heavily on printed instructional material to guide student efforts. The model provides an excellent approach for teaching basic subject matter, higher level cognitive understanding, and applications.

The following references include several mentioned in the text of this article and several additional references which will provide guidance to the reader who wishes to use the Purdue Three-Stage model in developing a course.

Ames, R. E., & Linden, K. W. Small-Group Problem Solving Activities for Applied Educational Psychology: A Three-Stage Model. Prospect Heights, IL: Waveland Press, 1978.

Ames, R. E., Linden, K. W., & Feldhusen, J. F. Guided group problem solving in the Purdue three-stage model of instruction. Educational Technology, 1977, 17, 12-16.

Bloom, B. S. Taxonomy of Educational Objective, Handbook I, Cognitive Domain. New York: Longman, Green, 1956.

Feldhusen, J. F. Designing instruction to achieve higher level goals and objectives. In J. B. Maas, & D. A. Kleiber (Eds.) Directory of Teaching Innovations in Psychology. Washington, D. C.: American Psychological Association, 1975, 421-422.

Feldhusen, J. F. Designing Courses of Instruction: A Three-Stage Model. Englewood Cliffs, N. J.: Educational Technology Publications, In press.

Feldhusen, J. F. Instructional development. Faculty Development and Evaluation in Higher Education, 1977, 2 (4), 24-26.

Feldhusen, J. F. Issues in teaching undergraduate educational psychology courses. In D. J. Treffinger, J. K. Davis, & R. E. Ripple (Eds.) Handbook of Teaching Educational Psychology. New York: Academic Press, 1977, 313-331.

Feldhusen, J. F., Ames, R., & Linden, K. The Purdue three-stage model for a college course. APA Division 2 Newsletter, October, 1973, 5-6.

Feldhusen, J. F., Ames, R. E., & Linden, K. W. Designing instruction to achieve higher level goals and objectives. Educational Technology, 1974, 14, 21-23.

Feldhusen, J. F., Bodine, R. L., & Crowe, M. H. A model of instruction as the base for course and instructor evaluation. College Student Journal, 1976, 10(3), 197-203.

Feldhusen, J. F., Linden, K. W., Ames, R. E. Using instructional theory and educational technology in designing college courses. Improving College and University Teaching Yearbook 1975. Corvallis, Oregon: Oregon State University Press, 1975, 64-69.

Linden, K. W., Ames, R. E., & Feldhusen, J. F. Undergraduate assistants as an integral factor in an educational psychology course. Teaching of Psychology, 1977, 4, 182-185.

APPENDIX A

Syllabus for A Course on College Teaching

Philosophy

This course is about instruction at the college and university level. A major goal of the course is to help you learn how to design effective instruction in courses which you teach or administer. The basic educational philosophy for this course is that instructors and students have strong responsibilities to one another. My obligations are (1) to be knowledgeable and up-to-date in the subject matter, (2) to plan and provide good learning experiences, and (3) assist you as an individual to meet the objectives of the course and fulfill your own needs. Your obligations are to participate actively and positively in this learning process and to make your needs known to the instructor. Education is a humanistic enterprise which demands respect and good will from both students and instructors.

Major Topics

The major topics to be covered in this course are as follows:

1. Formulating goals and objectives of instruction.
2. Identifying student characteristics which affect learning.
3. Basic learning processes which are relevant to the design of instruction.
4. Instructional variables which affect learning at the college level.
5. Designing or selecting instructional materials and methods.
6. Designing courses and instructional systems.
7. Evaluation of outcomes.

Other topics may stimulate our interest as the course progresses. We will feel free to deviate some from the planned outline when alternative topics seem worth pursuing.

Self-Instructional Guides (SIG)

At the beginning of each unit in this course, you will be given a one-page document called a "self-instructional guide" or SIG. The main purpose of the SIG is to guide your reading and study to acquire basic ideas for the unit. You should read it carefully as soon as you receive it. It gives you

a brief introduction to the unit, states objectives which clarify what you are to learn, tells you what to read and study, and offers some self-quiz questions to check your own learning. You should find the objectives especially helpful since they state what you should be able to do after completing the reading and study materials.

Group Instructional Guide (GIG)

In most of the units in this course, you will do a group project to help you understand the material better. This activity will be guided by a one-page document called a "Group Instructional Guide" or GIG. It gives you a brief overview of the group project, presents the learning objectives, and states exactly what you and your group are to do and what you are to produce in the way of a report. Your instructor will get students organized into small groups for this activity.

Procedures for Individual Projects (PIP)

In most units of this course, you will also do an individual project. The individual project gives you a chance to learn how to apply ideas you are learning to specific problems of interest to you. You will receive a one-page guide called "Procedures for Individual Projects" or PIP. It will give a brief introduction, state objectives, and tell you exactly what you are to do. You should plan to confer with your instructor after you decide on a project to make sure that it is suitable for the requirements of the PIP.

Use of the Stated Objectives

The objectives stated in SIG's, GIG's, and PIP's serve several purposes. The SIG's objectives should orient you to the major things to be learned from the readings and self-instructional units. The GIG's objectives should clarify for you and your group what you should learn from the group project. Similarly for the PIP, the objectives should tell you what you are expected to learn, and they should give you some indication of how the individual project is to be carried out.

Class Sessions Devoted to Active Learning (Stage Two)

There will be some times at the beginning of each class session for open discussion. Much of the time you will work in small groups on instructional design problems. Work on these tasks will be guided by the Group Instructional Guide (GIG). The GIG will specify the task for the group and the product to be delivered. Leadership in the small groups should rotate. The Group Instructional activity will always be designed to help you learn some aspect of instructional design as a prelude to some instructional design assignment which you will do individually. Group work products will be graded pass-fail and all members of a group share the grade.

Occasionally, class sessions will be devoted to visitors and occasionally to presentations by the instructor or to whole class discussion. There will also be some business to conduct from week to week. Finally, the culmination of group work will often be reports from groups to the whole class.

Testing and Grading

There will be a short test at the end of stage one of each unit. If you fall below a C grade, you will be given an opportunity to restudy the material and take the test over. You can earn up to 20 points per test. While each group project of stage two will be graded on a pass-fail basis, you will earn five points for each unit passed. Stage three projects will be graded, with each worth up to 30 points. The final grade scale will be as follows:

A = 350-385 points
B = 310-349 points
C = 270-309 points
D = 230-269 points
F = 000-229 points

A final objective examination will be given optionally. It will be worth up to 50 points.

Alternative Units

Alternative units can be selected by students who feel that they are knowledgeable in the area of any regular unit. The following units are available:

1. audio-visual aids
2. mastery learning
3. simulations and games
4. small groups in teaching
5. creativity and problem solving
6. the personalized system of instruction (PSI)
7. the literature of higher education
8. instructional development in higher education
9. values in teaching

Attendance

You will be expected to attend all class sessions. The class meets three times a week, 50 minutes each. Please arrive on time. If you are absent you will be expected to do one alternative unit assignment.

Role of Instructor and TA

There will be one TA for this course. The instructor and the TA will circulate during small group work to assist students in small group projects. The TA will also assist the instructor in management of the course and in the preparation of materials.

The instructor will lead the class discussions, grade all tests and assignments, meet with individual students to offer guidance concerning their work in the course, and maintain the individual student performance records.

Textbooks

The following books will be used as texts in this course:

Gage, N. L. (Ed.) The psychology of teaching methods. Chicago: University of Chicago Press, 1976.

Cross, K.P. Accent on learning. San Francisco: Jossey-Bass, 1976.

Davis, R. H. et al. Learning system design. New York: McGraw-Hill, 1974.

Doyle, K. O. Student evaluation of instruction. Lexington: Lexington Books, 1975.

All four books will be excellent resources for your professional library. Copies will also be available in the reserve section of the Psychology Library.